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Abstract for AGU Fall Meeting (Dec 2000)

Title: Intercomparisons of OH column measurements from the JPL Table Mountain Facility with measurements of O3 and H2O

Suggested Session: Atmospheric Sciences (contributed)

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Abstract:

OH column abundances and their diurnal variations have been measured from the JPL Table Mountain Facility since July 1997. Peak OH column abundances are found near solar transit and a diurnal asymmetry is observed in which OH column abundances in the afternoon are typically larger than at the corresponding solar zenith angle in the morning. The largest noontime OH column abundances are found in summer and the smallest in winter.

Best fit linear curves describing the dependence of OH column abundance on solar zenith angle have been derived for morning and afternoon at 10 to 70 deg solar zenith angles. These curves have been used to make a first order correction for the diurnal variation observed in the OH column in order to extract the variations with season in the OH column. These OH column measurements have been compared to contemporaneous, altitude-resolved measurements of H2O and O3 near TMF. The results from these intercomparisons generally are consistent with sensitivity calculations conducted using the Caltech/JPL one-dimensional photochemical model (Allen et al. 1981). The strongest correlation between seasonal OH column variations and variations in H2O or O3 concentrations has been found at 35 to 45 km altitude. The seasonal variations of OH column abundances will be used to place quantitative limits on the relationships among OH, H2O, and O3 and these limits will be compared to those derived from model sensitivity tests.

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